Characteristics of growth traits and their effects on body weight of G_1 individuals in the mud crab (*Scylla paramamosain*)

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ABSTRACT. The mud crab (*Scylla paramamosain*) is considered a potentially important marine crab species for selective breeding. Here, we first examined sex ratio and differences in 16 growth traits between females and males in a G_1 population of *S. paramamosain*, and we then analyzed the correlation between these growth traits and their effects on body weight (BW). Of these growth traits, nine were significantly different between sexes. In females, the correlation coefficients in all trait pairs ranged from 0.524 to 0.997. The traits carapace length (CL) and distance between lateral spine 2 (DLS2) significantly affected BW directly, with the path coefficients being 1.124 and -0.186, respectively. The determination coefficients of traits CL and DLS2 to BW were 1.263 and 0.035 with the total value being 0.951, indicating that the two traits were the key factors affecting BW. In males, the correlation coefficients in all trait pairs ranged from 0.881 to 0.999. The three traits body

height (BH), fixed finger height of the claw (FFHC), and meropodite length of pereopod 2 (MLP2) significantly affected BW directly, with the path coefficients being 0.484, 0.300, and 0.225, respectively. The determination coefficients of traits BH, FFHC and MLP2 to BW were 0.234, 0.090 and 0.051, with the total value being 0.967, indicating that these three traits played a key role in affecting BW. Moreover, we constructed two best-fit linear regression equations, which were Y (BW) = 4.969 X_1 (CL) - 0.758 X_2 (DLS2) - 140.177 and Y (BW) = 3.806 X_1 (BH) + 2.371 X_2 (FFHC) + 1.725 X_3 (MLP2) - 123.559 in females and males, respectively.